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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Adrianus Johannes Van Der Leest

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EXAMINER

IRVIN, THOMAS W

ART UNIT

PAPER NUMBER

3657

NOTIFICATION DATE

DELIVERY MODE

05/13/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary	Application No. 10/581,079	Applicant(s) VAN DER LEESE ET AL.	
	Examiner THOMAS IRVIN	Art Unit 3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-18, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The drawings and specification do not provide support for the claimed change in the coefficient of friction of the pulley in relation to a radial position.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Re claim 17, the claim language “corresponds to the contour shown” and the graph render the claim indefinite because it is unclear what exact values are depicted in the figure. The examiner suggests replacing the graph with equations or a table of values. The specification, including any claims, may contain chemical formulas and

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mathematical equations, but must not contain drawings or flow diagrams. A claim may incorporate by reference to a specific table where there is no practical way to define the invention in words. Claims may contain tables either if necessary to conform to 35 U.S.C. 112 or if otherwise found to be desirable. When such a patent is printed, however, the table will not be included as part of the claim, and instead the claim will contain a reference to the table number (see MPEP 2173.05(s)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 9-13, 18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durum (5,328,412) in view of Brandsma et al. (2003/0144097).

In Re claim 1, Durum discloses, with reference to fig. 1, a CVT for a motor vehicle, comprising: a drive belt (6) having running surfaces (36); a primary pulley (10) with two conical pulley sheaves (20,22); a secondary pulley (12) with two conical pulley sheaves (24,26), wherein the belt is wound around the primary and secondary pulleys and clamped therebetween by the primary and secondary pulley's clamping forces to transmit a supplied torque, the sheaves of the pulleys having a convex curvature, the curvature varying in relation to a radial position such that the angle is at a highest value

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at a location of a radially outermost position on the sheaves. Durum fails to disclose specifics of the clamping forces.

Brandsma et al. teach changing the clamping force of one of the pulleys (2,3) to depart from a clamping force equilibrium to change the running radius of the belt around the pulleys and the CVT ratio (see par. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have controlled the CVT of Durum by changing the clamping force ration between the primary and secondary pulleys, as taught by Brandsma et al., to efficiently and effectively control the CVT ratio between the primary and secondary pulleys.

Examiner notes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have controlled the CVT of Durum to any appropriate clamping ratio, including a ratio between 1 and 1.8, between the primary and secondary pulleys, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In Re claims 2, 3, and 20, the CVT as modified, appears to be meet the limitations of the claim in that the clamping force in the primary and secondary pulley change depending on the running radius of the drive belt, and that the clamping force becomes smaller as the running radius of the drive belt increases. Brandsma et al. fail to disclose the specific clamping forces of the pulleys. However, Brandsma et al. does disclose that the clamping force may be increased or decreased (see par. 2), and that the clamping force would be greater in an overdrive position than a low-drive position.

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Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have any appropriate clamping ratio, including a ratio between 1.3 and 1.5, between the primary and secondary pulleys, to keep the drive belt properly engaged with the respective pulley, and to adjust the CVT to the desired transmission ratio.

In Re claims 4 and 5, Durum, as modified, fail to disclose a factor of safety. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated an appropriate factor of safety into the design of the CVT to ensure that the drive belt would not slip or the transmission fail.

In Re claims 6 and 7, see fig. 1 of Durum.

In Re claim 9, Durum fails to teach rings on the belt.

Brandsma et al. teach forming a belt (10) provided with at least one set of rings (14,15) and a number of transverse elements (13), which can move along the set of rings (12) in the circumferential direction thereof and are provided with the running surfaces (11) (see fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the belt of Durum to include a set of rings and transverse elements, as taught by Brandsma et al., to allow for greater frictional interaction with the pulleys, and thus greater torque transfer, between the belt and the conical contact surfaces of the pulleys.

In Re claims 10 and 11, the CVT of Durum appears to meet the limitations of the claim in that the contact angle at the largest diameter is greater than the contact angle at the smallest diameter (see fig. 1).

In Re claims 12, 13, and 21, the pulleys of Durum appear to meet the limitations of the claims, in that the contact angle of the pulley at a largest diameter is approximately 10 degrees, and that the contact angle of the pulley at the smallest diameter is approximately 7 degrees (see fig. 1).

In Re claim 18, the CVT of Durum, as modified, appears to meet the broad limitations of the claim, in that the clamping force ratio has an at least approximately constant value when the transmission ratio is held constant.

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durum (5,328,412) in view of Yuki Yoshi (JP 61-048656).

In Re claims 14 and 16, Durum discloses, with reference to fig. 1, a CVT comprising: a drive belt (6) having running surfaces (36); a primary pulley (10) with two conical pulley sheaves (20,22); a secondary pulley (12) with two conical pulley sheaves (24,26). Durum fails to teach a changing coefficient of friction on the contact surfaces of the pulleys.

Yuki Yoshi teach, with reference to figs. 6 and 7, including deposits (33) on the pulley sheaves (26d,26e) such that the frictional coefficient of the pulley is increased as a diameter of the pulley is decreased (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the pulleys of the CVT of Durum, to include frictional deposits such that the pulleys have a higher coefficient of friction at a smaller diameter portion and a lower coefficient of friction at a largest diameter portion, as

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taught by Yuki Yoshi, to compensate for the change in contact area, and thus friction forces present between the belt and the pulleys due to the CVT operating diameter.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durum (5,328,412) in view of Yuki Yoshi (JP 61-048656) as applied to claim 14, and further in view of Tatara et al. (4,898,567).

Durum, as modified, teach the claimed invention except failing to teach that a radially outermost portion of the primary pulley has a lower coefficient of friction than a radially outermost part of the secondary pulley.

Tatara et al. teach, with reference to col. 2 lines 31-46, making a driving pulley (secondary pulley) have a higher coefficient of friction at a radially outer portion than a driven pulley (primary pulley). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the CVT of Durum, as modified, to have differing frictions between the primary and secondary pulley, as taught by Tatara et al., so as to reduce the roaring or buzzing noise when the CVT is at a hi/low transmission ratio.

Allowable Subject Matter

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Response to Arguments

Applicant's arguments filed 10 February 2010 have been fully considered but they are not persuasive.

In response to applicant's arguments concerning the 35 U.S.C. 112 1st par. rejections of claims 14-18, the examiner continues to point out that the specification does not explicitly state that the coefficient of friction changes with the radius of the pulley nor does it increase as the radius increases. The fact that μ_r is present in applicant's equations does not implicitly mean that the coefficient of friction is not a constant, or that it increases with an increase in radius.

In response to applicant's arguments concerning the clamping force ratios, the examiner acknowledges that the clamping force ratio is dependent on the relative radius of contact of the belt with the primary and secondary sheaves, the relative coefficients of friction of the pulleys, and the relative degree of curvature of the pulleys. The examiner understands Durum to teach a convex pulley, and that varying the curvature of the pulley is simply an engineering design choice; and Yuki Yoshi to teach varying the frictional coefficients of the pulley sheaves.

Additionally, the examiner points out that the claims do not specify the relative locations of the belt with the sheaves during a "largest transmission ratio", and is therefore not definitive as to the location of the belt on the primary and secondary

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sheaves. The examiner contends that at a clamping force ratio of 1, the transmission ratio is at a “largest transmission ratio”.

In response to applicant’s arguments that Yuki Yoshi fail to teach the claimed coefficients of friction, the examiner points to the translated abstract, which recites “the deposit 33 is yielded by depositing fine metal grains on metal bases 26d, 26e, whose frictional coefficient is more increased as a diameter of the pulley is more reduced by making the metal grains larger or smaller”.

In response to applicant’s arguments that Tatara et al. fail to teach the differing coefficients of friction, the examiner points to fig. 11, and col. 2 lines 31-46 of Tatara et al.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS IRVIN whose telephone number is (571)270-3095. The examiner can normally be reached on M-F 10-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Irvin/
Examiner, Art Unit 3657

/Bradley T King/
Primary Examiner, Art Unit 3657